Pamphlet by Alexander Graham Bell, 1872

ON THE NATURE AND USES OF VISIBLE SPEECH.

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EXTRACTED, BY PERMISSION, FROM THE "OLD AND NEW."

BOSTON: PRINTED BY RAND, AVERY, & CO., 3 CORNHILL.

1872.

NATURE AND USES OF VISIBLE SPEECH. BY A. GRAHAM BELL.

There have been many attempts, during the past few years, to solve the problem of a universal alphabet. Perhaps the most notable of these was that made by the late Chevalier Bunsen.

In 1854 he convened an assemblage of European philologists for the purpose, at the Prussian Embassy in London.

After four meetings, the convention broke up, without having accomplished any thing further than ascertaining, that, at that period, the requisite physiological basis for a universal alphabet had still to be discovered.

In 1864 my father, Mr. A. Melville Bell, Professor of Vocal Physiology, claims not only to have discovered the true organic relations of speech sounds, but to have invented a universal alphabet based upon his discovery.

His new method of writing he termed “Visible Speech,” from a peculiarity in the formation of the letters.

In all previous alphabets, the different lines and curves of which the letters are composed have no significance, and the characters themselves are mere arbitrary signs for the sounds they represent.

In the visible speech alphabet, on the other hand, every letter, and every part of a letter, has a definite physiological meaning.

The elementary lines and curves are *pictorial of parts of the mouth;* and they are capable of being grouped together into a compound form, just as the various parts of the mouth are arranged in uttering a sound.

Take, for instance, the representative of the sound M. An analysis of the character, or “symbol” (see diagram and explanation, pages 71, 72) will reveal the fact, that it is composed of four of the elementary signs joined together.

One of these is seen to be the outline of a *lip;* another symbolically pictures a *closing action;* a third exhibits the shape of the glottis in forming *voice;* and the fourth is the outline of a *nose.*

If we translate these pictures into English words, we may call the symbol for M, “Lip-shut-voice-nose.” This is, in effect, a direction to shut the lips, and pass voice through the nose.

The inventor claimed, that, in a similar way, he could represent any sound the human mouth could make, so that another person should be directed how to utter it.

He desired that this assertion should be put to the proof, and invited philologists and others to test his new mode of writing.

For three years the system was submitted to all sorts of experiments, in public and private; and it was abundantly proved,—

First, that the sounds of any 2 language can be written by means of Visible Speech; and second, that a person unacquainted with a language can pronounce it at sight, with vernacular correctness, while deducing his pronunciation solely from the physiological symbols.

An account of a few of the earlier experiments was published in a pamphlet entitled, “Visible Speech: a New Fact Demonstrated.” (1865.)

In order to convey an idea of the nature of these experiments, I quote the record of one made by the late P. B. Reid, Esq., of Edinburgh, Professor of Hindostanee and Persian.

Prof. Reid says,—

“Prof. Melville Bell, having requested me to test his system of ‘Visible Speech’ as regards the languages of the East, I selected some of the most difficult words I could think of, in pure Hindoo, Urdu, and Persian, consisting of gutturals, dentals, and nasals. Students of Oriental languages can only pronounce such words after long practice, and by hearing them uttered by natives of the East. After Mr. Bell had symbolized them on paper, he called in his two sons, who had before that been in a separate room, and asked them to read out the words. To my astonishment, the young men sounded them most accurately, and just as one hears from natives of India. I am sure that these young men had never heard any such words. All I can say is, that any set of symbols which can produce such a result, must be the most perfect thing ever discovered.”

Although more than *fifty* languages and dialects have been ransacked for sounds supposed incapable of representation, and though noises have even been *invented* to test the capabilities of the new alphabet, *no solitary instance of failure has yet occurred.*

The very sounds we make in calling dogs and cats and horses have been pictured, and ventriloquial noises duly represented.

Perhaps the most noteworthy feature of the invention is its simplicity. Though the sounds of speech may be infinite in variety, they are all formed by a limited number of organs; and they can all be represented by the combinations of *ten* elementary symbols. These primary forms are in themselves no burden upon the memory, because they are *pictorial* of what they represent. For the same reason they can be explained without the use of language at all. As the late Sir David Brewster believed, they can be “rendered intelligible by means of diagrams, aided by illustrations from the voice of a teacher.”

Alexander J. Ellis, Esq., F.R.S., probably the greatest living authority on the subject of phonetics, states his opinion of visible speech in a letter to “The Reader,” bearing date Aug. 5, 1865.

After referring to his own works, those of Amman, De Kempelen, Johannes Müller, K. M. Rapp, C. R. Lepsius, E. Brücke, S. S. Haldeman, Max Müller, and to “a host of other works of more or less pretension and value” (the treatises enumerated containing perhaps “a complete account of the present state of phonetical knowledge”), he says,—

“Now, it is with this full and distinct recollection of works which I have not only read, but studied, many of them with great care and attention, that I feel called upon to declare, that, until Mr. Melville Bell unfolded to me his careful, elaborate, yet simple and complete system, I had no knowledge of alphabetics as a science. 3 Much had been done. . . . But alphabetics as a science—and I have looked for it far and wide—did not exist. We did not know what elementary sounds, or modifications of sound, should be expressed; and the art of expressing such as had been pretty generally received was in a state of the greatest confusion.”

In regard to the uses of the system, it must not be supposed that there is any intention of superseding existing alphabets by the new letters.

Visible Speech is intended solely for international and scientific purposes, and as a key to other alphabets.

In the words of the late Prof. De Morgan, it forms “a sound-bridge from language to language, from no speech to speech.”

USES OF THE INVENTION.

I. The first and legitimate use of this new system of writing is, as an instrument for facilitating philological researches.

Sounds that no other alphabet can even vaguely imitate can be written so that their relations to other sounds are seen at a glance. The affinities of languages, often concealed by differences of alphabet or by a different usage of the same alphabet, may be rendered manifest; and fast-disappearing dialects—most valuable from a philological point of view—can be preserved for study and comparison.

On the 3rd of December, 1869, the following resolution was unanimously carried at a meeting of the Philological Society of London, England:—

“This meeting of the Philological Society desires to express its strong sense of the beauty and great value of Mr. A. Melville Bell's System of Visible Speech, and its ready applicability to purposes of philological investigation.”

II. Since hitherto unwritten languages and dialects can be reduced to writing by means of Visible Speech, the blessings of knowledge may be diffused among the most ignorant and barbarous nations.

Suppose that a missionary is sent into the heart of Africa. He can at once, though unacquainted with their speech, teach the natives to read and write their own vernacular. If works have already been prepared in the system, he can read such books intelligibly to them, while he himself is entirely ignorant of the meaning of what he utters.

III. The system does away with the necessity of hearing a language spoken in order to master its pronunciation.

One who is able to read his native tongue from the new characters can, with little difficulty, deduce the sounds of other languages from their symbols.

Those whose duties take them to foreign countries can familiarize themselves with the utterances of the natives before leaving home. The language of any imperial state may speedily be diffused over the most remote of her dependencies.

IV. If children in primary schools were exercised on the complete gamut of speech-sounds, by means of symbols, it would not only be possible to impart to them a uniform and standard pronunciation, but they would be eminently qualified for the study of foreign languages.

V. Teachers, if instructed in the correct actions of the vocal organs (as they can be by means of Visible Speech), would be enabled to correct in the bud all the various forms of defective speech. The prevalence of defective or peculiar articulation is entirely owing to the fact that speech is ordinarily acquired by imitation.

Those who possess little imitative power speak indistinctly, or substitute certain elements for others akin to them in sound; while others, who have the imitative faculty more developed, are apt to copy too well the utterances of those with whom they come in contact.

Stammering, and many other forms of defective speech, and all dialectic peculiarities, are perpetuated by *imitation.* “Knowledge is power.” When teachers themselves know *what they do* in speaking well, the correction of all peculiarities of utterance will be a matter of little difficulty.

VI. To teachers of the deaf and dumb, the system is equally invaluable, as a means by which artificial articulation may be taught to those whose ears are closed to sounds.

The deaf are only dumb because they cannot hear the sounds of speech to imitate them. All intelligent deaf-mutes may be trained to correct and intelligible utterance by means of Visible Speech. . . ”

VII. Illiterate adults, in all countries, may be taught to read their own language from books printed in the system. The imperfectly phonetic character of all previous alphabets has been the cause of the great length of time required to master the art of reading. Had each sound an invariable representative, and each letter an invariable sound, a pupil would commence to read whenever the powers of the letters had been acquired. Hence the hope is indulged, that, when works have been printed in the Visible Speech typography, illiterate adults may be enabled to read such books *in a few days.*

It will be seen by the recent report of the Commissioner of Education, that there are, in the United States alone, 3,637,422 adults who can neither read nor write. To these persons an ordinary book must be forever a sealed volume; *but a Visible Speech literature would be within their reach.*

VIII. There can be no doubt that many feeble-minded persons, who are utterly unable to master the difficulties of ordinary letters, may be enabled to read from such a simple means of writing as that afforded by the new alphabet.

IX. The symbols have been arranged into a code for telegraphic transmission, by means of serial *numbers.* A telegraphic despatch may thus be sent through any country without

translation, and in the very words and sounds of the original message. We may look forward to such possibilities as the following:—

Suppose that a Chinaman in Americа wishes to send a message in Chinese to a fellow-countryman in Russia. If he is not acquainted with Visible Speech, he goes to some one who is, and to him he utters his message. This person, without knowing, perhaps, the purport of what he writes, represents in symbols the uncouth sounds he hears, and then, by consulting the code, translates the writing into numbers.

This cipher-despatch *any telegraph operator* can send to its destination.

When the message reaches the Chinaman in Russia, he can read and understand it if he is familiar with Visible Speech. If not, he takes it to some one who is acquainted with the system. This person carefully *utters* the strange sounds represented. To the speaker himself it may seem nonsense, but to the Chinaman *it is Chinese.*

Thus two Visible Speech experts, in different countries, may be enabled to direct the telegraphic transmissions of messages in any language, by others unacquainted either with Visible 5 Speech, or with the languages they manipulate.

X. Prof. Bell has long been known as the inventor of a system of phonetic short-hand; for which, in 1854, he received the silver medal of the Royal Scottish Society of Arts.

When the successful results of the experiments with Visible Speech became known, he was repeatedly requested to attempt the formation of a stenographic alphabet of *universal* applicability. After many experiments, he succeeded in combining the principles of the two inventions, so as to produce a totally new alphabet suited to the wants of stenographic reporters in all countries.

XI. The simplicity of the letters of this “line alphabet” suggested their applicability to the important purpose of embossed printing for the blind.

Experiments proved the very easy tangibility—by persons unaccustomed to tactile reading—of most of the symbols. The ambiguous forms were modified to suit the special needs of the blind, so as to enable them to profit by a common international literature. The words are capable of contraction according to the rules of stenography, so that works printed in this system need not be nearly so bulkly as those at present used by the blind.

Mr. Ellis, in another part of the letter referred to above, says,—

“If Mr. Bell were to publish his system as a book, it might be doomed to repose on the same shelf with the “Real Character” of Bishop Wilkins (which also contains an admirable analysis of speech-sounds). Mr. Bell can only teach it by transfusing it into living organisms which will give his symbols notion and meaning.

. . . .“Hence, if the world will enjoy the benefit, the great scientific and practical benefit, of Mr. Melville Bell's discovery, it must place him in a position to communicate it to proper teachers, by whom it may be conveyed in an ever-widening circle. It is not a case in which a man can do this for himself without ample independent means; and even then he would have little chance of success, if the importance of his mission did not receive a public recognition. For this reason, Mr. Melville Bell appeals to the Government of the country; and his appeal should be backed, on the same principle which induced France to give Daguerre a pension for his discovery. The benefit is one for mankind, which cannot sufficiently reward the individual; and the benefit may, therefore, be lost by death, if not secured at once.”

The inventor's appeal to the English Government for aid in publishing and applying his system, though unanimously supported by the British press, which showed a most enlightened zeal in forwarding the cause of the new science, was unsuccessful.

So, in 1867, he published the inaugural edition of the system, entitled “Visible Speech; the Science of Universal Alphabetics.”

The seed thus sown has slowly been producing fruit. It is more and more evident every year, that the system is not to be allowed to pass into obscurity; but that public recognition of its great practical value will, ere long, enable the inventor to carry out the philanthropic schemes he has proposed.

The following diagram and key will be found to illustrate clearly the essential elements of the Visible Speech alphabet.

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ILLUSTRATIONS OF VISIBLE SPEECH.

Fig. 1.

Fig. 2.

Fig. 3.

7

KEY TO ILLUSTRATIONS OF VISIBLE SPEECH.

The pictorial nature of the elementary characters will perhaps be best understood by reference to such a diagram as that in fig. 1. The darkened parts of the picture *are the Visible Speech symbols* for the organs of which they are the outlines. These symbols are written separately, and in one line, at the lower part of the diagram. They indicate respectively, as they stand, beginning at the left hand, the throat, the back of the tongue, the top of the tongue, the point of the tongue, the lower lip, and the nose.

The sign for the throat (the straight line) represents a mere chink or slit in the throat, and is pictorial of the vocalizing condition of the glottis. It is therefore used to denote “voice.”

The sign for the nose is, in reality, pictorial of the uvula, the pendulous extremity of the soft palate. When the soft palate is depressed, the breath passes up behind it, and escapes

through the nostrils. When it is raised, the communication between nose and mouth is cut off.

Hence the application of a symbol originally pictorial of the soft palate to the nose.

Its strict scientific meaning is,—“soft palate depressed;” but it will be more popularly understood as “air passing through the nostrils.”

At the lower part of fig. 1 are two additional symbols, like parentheses laid horizontally. The first of these is intended to convey the idea of a *pipe;* and the second exhibits this pipe *closed at one end.* The first is used to denote a *narrow passage in the mouth,* through which the breath may pass; and the second, *complete closure of the mouth passage.*

Fig. 2 illustrates the combination of these signs. The first compounded symbol indicates “a narrow passage” for the breath, over (plus) the “back of the tongue.” The combination indicated by the plus sign stands after the sign of equality, being a crescent protracted to three-fourths of a circle. This is the position of the mouth in sounding *ch* (German), in the word *nach.*

The second symbol (lip *plus* closure) directs us to “close” the “lips.” This position is assumed by the mouth in uttering a word commencing with *p, — e.g.,* paper.

The third symbol (lip *plus* closure *plus* voice plus nose) indicates that the “lips” are to be “closed,” and the voice passed through the “nose.”

The symbols in fig. 3 describe certain positions of the mouth which yield sounds. The reader can, it is presumed, readily analyze them from the preceding figures.

Key words are so variously pronounced by different speakers, as to be, in many cases, worthless as a means of identifying sounds.

They are, therefore, omitted in the present instance, except in those cases where they will be likely to assist the reader.

The fact that the Visible Speech symbols exhibit to the eye all the relations the sounds themselves do to the ear, and that the organic relations are just as clearly shown, will be obvious by a comparison of the characters for

P B M T D N K G NG.

Comparing these as thus placed, Visible Speech and its signs say that—

As P is to B, so is T to D, and K to G.

As B is to M, so is D to N, and G to NG.

As P is to T, so is B to D, and M to N.

As P is to K, so is B to G, and M to NG. &c., &c.

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The Universal Mother.

P, B, and M (see the diagram, Fig. 3) have the “lip” and “shut” signs in common; and in sounding all, the lips are shut.

T, D, N, agree in shutting off the breath by means of the point of the tongue, and K, G, NG, in the closing action being performed by the back of the tongue.

Furthermore, the sounds P, T, K (represented by the same symbol turned in different directions), are made by the same organic action performed at different parts of the mouth; so with B, D, G, and M, N, NG.

The relations between the symbols guide the student to the pronunciation of foreign sounds.

Thus, suppose a person wished to find out the French pronunciation of *r,* in such a word as *thëâtre;* let him compare its symbol with that for the English *r.* It is the same, except that the voice mark is absent. The position of the tongue, then, is the same; but the sound must be whispered.

So, again, any person *who can blow his soup when it is too hot (!)* can acquire the pronunciation of German *w;* for the symbol tells us to blow as before, but to make a murmur of voice at the same time.

Such an article as this can only give a rudimentary idea of the nature of Visible Speech. For further particulars the reader is referred to the Inaugural Edition of the System.1

1 This may be obtained on application to the author, Prof. A. Melville Bell, Brantford, Ontario.

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